

First record of the genus *Shargacucullia* G. Ronkay & L. Ronkay, 1992 (Insecta, Lepidoptera, Noctuidae) from the Altai Mountains

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Abstract

The genus *Shargacucullia* G. Ronkay & L. Ronkay, 1992 is recorded in Altai Mountains (eastern Kazakhstan) for the first time. Three species, *S. (Verbascullia) verbasci* (Linnaeus, 1758), *S. (Shargacucullia) xylophana* (Boursin, 1934) and *S. (Shargacucullia) nekrasovi* G. Ronkay, L. Ronkay & Gyulai, 2011 are reported in the Tarbagatai Ridge and West Altai Mountains. These are the north-easternmost known localities of the species. Adults, genitalia and habitats of the species are illustrated.

Key words

Kazakhstan; Asia; new records.

Academic editor: Reza Zahiri | Received 28 September 2016 | Accepted 12 April 2017 | Published 3 November 2017

Citation: Volynkin A, Titov S, Černila M (2017) First record of the genus *Shargacucullia* G. Ronkay & L. Ronkay, 1992 (Insecta, Lepidoptera, Noctuidae) from the Altai Mountains. Check List 13 (6): 733–738. <https://doi.org/10.15560/13.6.733>

Introduction

Shargacucullia G. Ronkay & L. Ronkay, 1992 is a Eurasian genus belonging to the noctuid subfamily Cuculliinae Herrich-Schäffer, 1850 (Fibiger et al. 2011, Zahiri et al. 2011). A comprehensive revision of the genus was published by Ronkay et al. (2011). The detailed comparison of *Shargacucullia* and the related genus *Cucullia* Schrank, 1802 was given by Ronkay and Ronkay (1992, 1994). The genus *Shargacucullia* is heterogeneous and subdivided into 6 subgenera comprising 42 described species.

Starting in 2005 and continuing until now, we conduct an intensive faunistic study of the Noctuoidea fauna from the Altai Mountains. We use the term “Altai Mountains” (also known as Altai mountain country) in the sense

proposed by Kamelin (1998, 2005); the borders of this mountain system are discussed in detail by Kamelin (2005) and Volynkin and Matov (2011). Our study led to species of the genus *Shargacucullia* being found in western part of the Altai Mountains. This is a first record of the genus for the region.

Methods

The fieldwork was conducted from April to September every year. In June 2013, during an expedition to eastern Kazakhstan, *Shargacucullia xylophana* (Boursin, 1934) was collected in the western part of the Tarbagatai Ridge. An additional female specimen was found among materials collected in the Kazakhstan part of the western Altai (Fig. 1). In late April 2014 and early May 2015, a second



Figure 1. Map of localities of *Shargacucullia xylophana*.

species of the genus, *S. verbasci* (Linnaeus, 1758) was collected in the southwestern foothills of the Tarbagatai Ridge (Fig. 2). Finally, in late April 2015, a third species, *S. nekrasovi* G. Ronkay, L. Ronkay & Gyulai, 2011 was collected in the Kyzylbeltau Mountains in the southwestern foothills of the Tarbagatai Ridge (Fig. 3). These are the first occurrences reported for the genus *Shargacucullia* in the Altai Mountains.

We collected the moths using ultraviolet and mercury light-traps. For correct species identification, the genitalia were studied and compared with the genitalia of specimens from other localities and the diagnoses and illustrations presented by Ronkay et al. (2011). The genitalia were dissected and mounted in euparal on glass slides. Photographs of the genitalia were made using a Zeiss Stemi 2000-C microscope and Zeiss AxioCam Erc 5c camera, and processed in Adobe Photoshop CS4® software. Photographs of moths were taken using a Nikon D3100/AF-S the camera with a Nikkor 18–55 mm lens. The specimens are deposited in the collection of Siberian Zoological Museum of the Institute of Animal Systematics and Ecology, Siberian Branch of Russian Academy of Sciences (SZMN; Novosibirsk, Russia) and the private collection of Anton Volynkin (CAV, Barnaul, Russia).

Results

Shargacucullia (Verbascullia) verbasci (Linnaeus, 1758)

Figures 2, 4, 5, 10, 13

Material examined. 2 males, 30.IV.2015, E Kazakhstan, Urdzhar district, W Tarbagatai Mts, 9.5 km ENE of Tasaryk village, 705 m, 47°08'04.6" N, 081°24'51.0" E, bottom of rocky slope, Volynkin A.V. & Titov S.V. leg., genital slides AV1471m, AV1472m Volynkin, deposited in SZMN, catalogue numbers: SZMN-Shargacucullia-001, SZMN-Shargacucullia-002; 5 males, 1



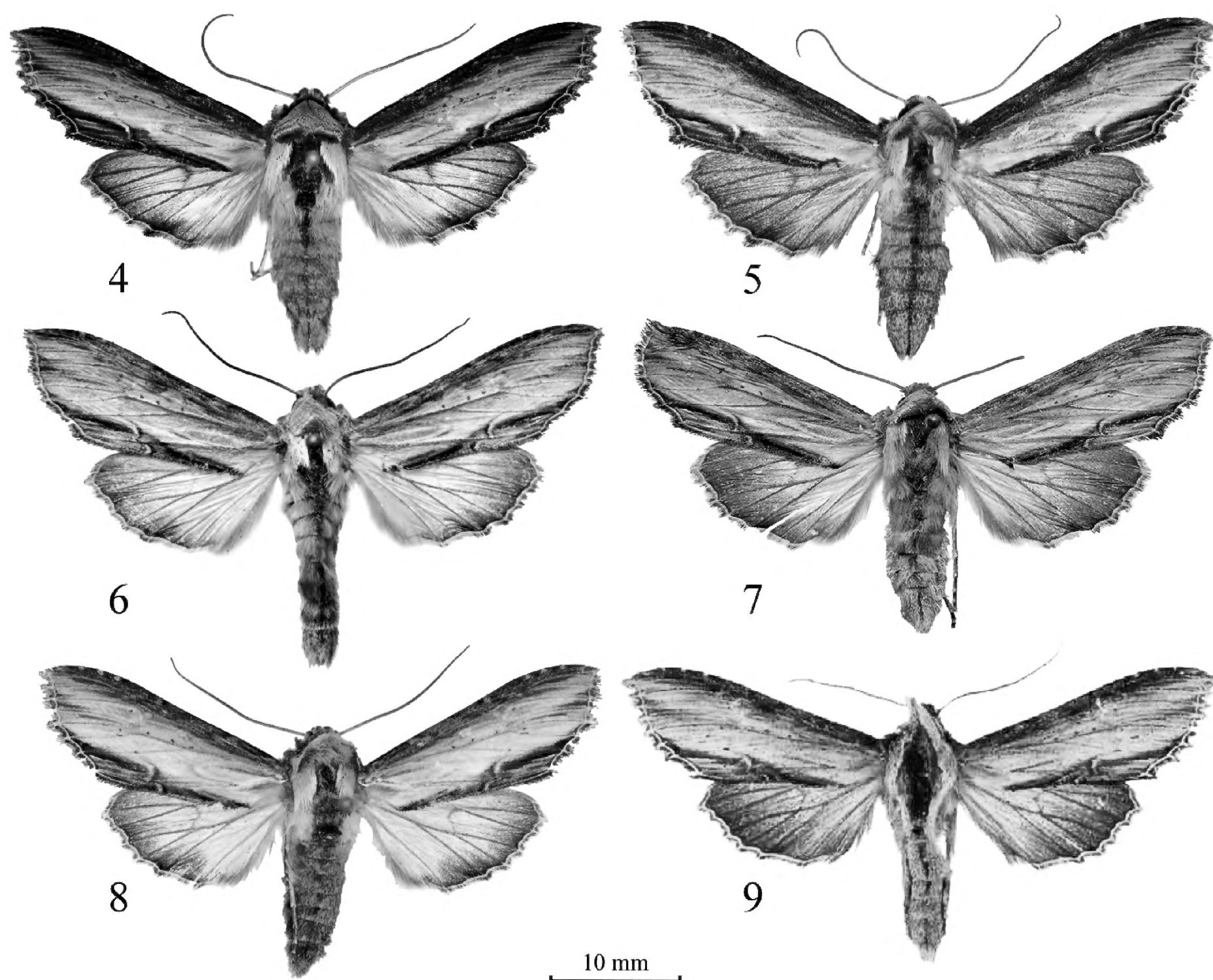
Figure 2. Map of localities of *Shargacucullia verbasci*.

female, same data, genital slides AV1433m, AV1434m, AV1473f Volynkin, coll. AVB; 4 males, 20.IV.2014, E Kazakhstan, Urdzhar district, Tarbagatai Mountains, 1 km N of Kyzymbet (Alekseevka) village, 47°15'47" N, 081°32.42' E, 960 m, at light, leg. A. Volynkin, S. Titov & S. Knyazev, genital slides AV1247, AV1248 Volynkin, coll. AVB.

The identification of the specimens from the Tarbagatai Ridge was confirmed by consulting Ronkay et al. (2011) and by comparison with specimens from southern Kazakhstan that are identical to the types illustrated by Ronkay et al. (2011). The genitalia of specimens from the Tarbagatai Ridge have no differences from those of specimens from southern Kazakhstan as well as the illustrations by Ronkay et al. (2011). This species can be distinguished from sympatric *S. xylophana* by its darker forewing costa and brown wings ground colour, and from sympatric *S. nekrasovi* differs by its slightly paler forewing costa and paler hindwings. Specimens of *S. verbasci* in poor condition can be distinguished from *S.*



Figure 3. Map of localities of *Shargacucullia nekrasovi*.



Figures 4–9. *Shargacucullia* spp., adults. **4.** *Sh. verbasci*, male, Tarbagatai Mountains, 1 km N of Kyzymbet village (Coll. AVB). **5.** *Sh. verbasci*, female, Tarbagatai Mountains, 9.5 km ENE of Tasaryk village (Coll. AVB). **6.** *Sh. xylophana*, male, Tarbagatai Mountains, 6.7 km N of Kyzymbet village (Coll. AVB). **7.** *Sh. xylophana*, female, Altai Mountains, SE vicinity of Ust-Kamenogorsk (Coll. AVB). **8.** *Sh. nekrasovi*, male, Tarbagatai Mountains, 9.5 km ENE of Tasaryk village (Coll. SZMN). **9.** *Sh. nekrasovi*, paratype female, Tajikistan, Pamir Mountains (after Ronkay et al. 2011).

nekrasovi only by studying of the genital structures. In the male genitalia, *S. verbasci* differs from *S. xylophana* by its broader uncus, shorter valva with much narrower cucullus, broader harpe, and cornuti shape, and from *S. nekrasovi* by its shorter uncus, shorter valva with much narrower cucullus, broader harpe, and shorter and narrower cornuti in vesica. In the female genitalia, *S. verbasci* differs from *S. xylophana* by its shorter and broader antevaginal plate, slightly shorter and less curved ductus bursae, slightly larger appendix bursae, and from *S. nekrasovi* by its shorter antevaginal plate, ductus bursae slightly shorter and narrower posteriorly, and larger appendix bursae.

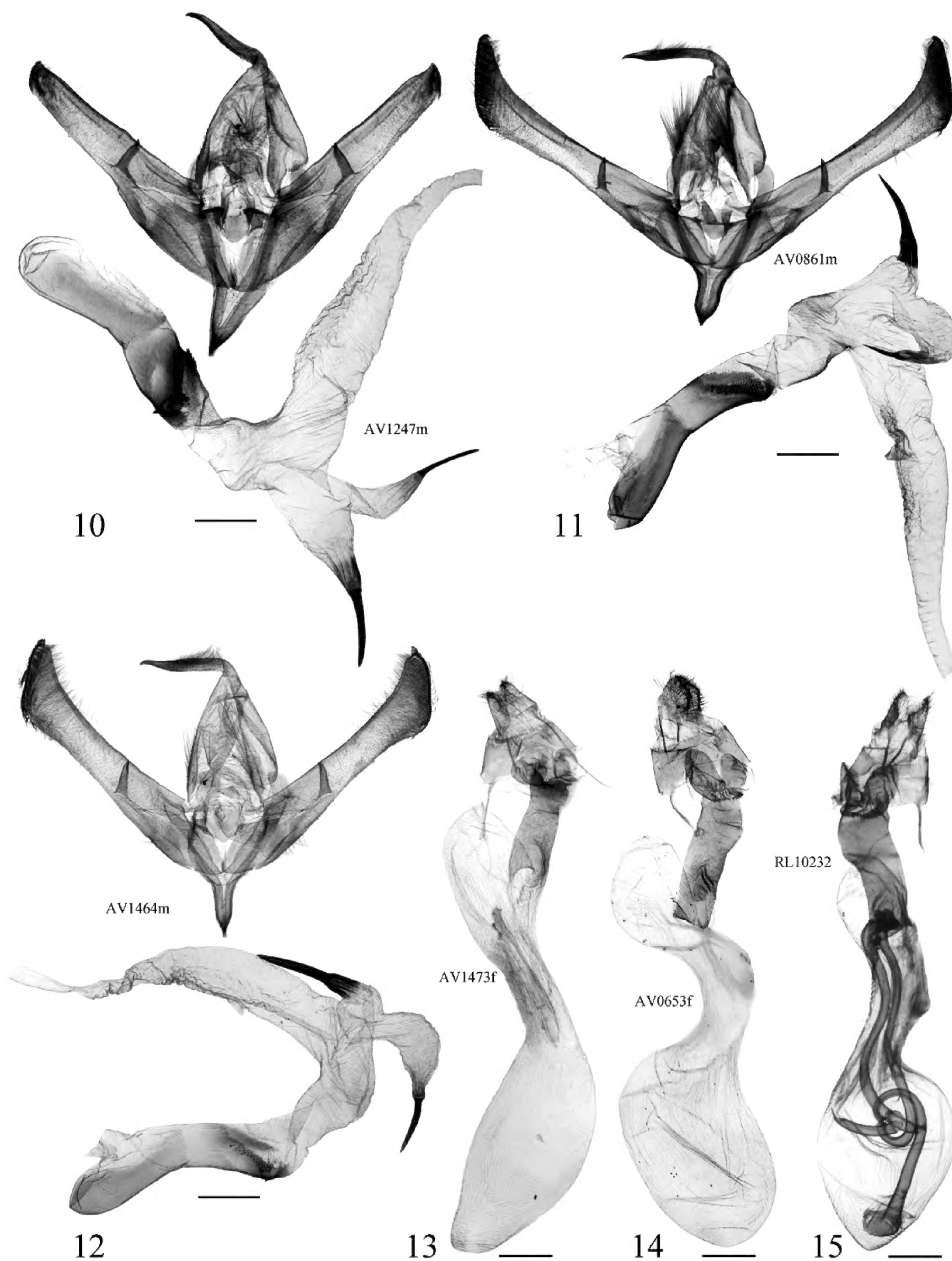
Shargacucullia (Shargacucullia) xylophana (Boursin, 1934)

Figures 1, 6, 7, 11, 14

Material examined. 2 males, 24.VI.2014, E Kazakhstan, W Tarbagarai Mts, Urdzhar district, 7 km NE of Altynshoky (Predgornoe) village, 920 m, 47°11'37" N, 081°09'46" E, Volynkin A.V. & Titov S.V. leg., coll. SZMN, catalogue numbers: SZMN-Shargacucullia-004,

SZMN-Shargacucullia-005; 2 males, 3 females, same data, coll. AVB; 2 males, 2 females, 09.VI.2013, E Kazakhstan, East Kazakhstan, Urdzhar district, Tarbagatai Ridge, 6.7 km N of Kyzymbet (Alekseevka) village, mesophilous shrubby slopes, 1300 m, 47°18'21.9" N, 081°32'9.1" E, leg. Volynkin A.V., Titov S.V. & Černila M., genital slide AV0861m Volynkin, coll. AVB; 1 female, 16–20.vi.2010, E Kazakhstan, W Altai Mts, vicinity SE of Ust-Kamenogorsk, 49°53' N, 082°43' E, leg. R.V. Artemjev, genital slide AV0653f Volynkin, coll. AVB.

The identification of the specimens from the Tarbagatai Ridge was confirmed consulting Ronkay et al. (2011) and by comparison with specimens from the Tien Shan mountain massif. The genitalia of specimens from the Tarbagatai and western Altai Mountains have no differences from those of specimens from Tien Shan mountain massif as well as from illustrations by Ronkay et al. (2011). The species can be distinguished from sympatric *S. verbasci* by its paler forewing costa and pale greenish brown forewing ground colour. The sympatric *S. nekrasovi* differs by its slightly paler forewing costa and



Figures 10–15. *Shargacucullia* spp., male and female genitalia (scale bars 1 mm). **10.** *Sh. verbasci*, male genitalia, Tarbagatai Mountains. **11.** *Sh. xylophana*, male genitalia, Tarbagatai Mountains. **12.** *Sh. nekrasovi*, male genitalia, Tarbagatai Mountains. **13.** *Sh. verbasci*, female genitalia, Tarbagatai Mountains. **14.** *S. xylophana*, female genitalia, Altai Mountains. **15.** *Sh. nekrasovi*, female genitalia, paratype (after Ronkay et al., 2011).

pale greenish brown forewing ground colour. In the male genitalia, *S. xylophana* differs from *S. verbasci* by its narrower uncus, longer valva with much broader cucullus, narrower harpe, and cornuti shape; from *Sh. nekrasovi* by its slightly shorter uncus, slightly narrower cucullus, slightly smaller harpe, and much shorter and narrower cornuti in vesica. In the female genitalia, *S. xylophana* differs from *S. verbasci* by its longer and narrower ante-vaginal plate, slightly longer and more curved ductus

bursae, and slightly smaller appendix bursae, and from *S. nekrasovi* by its narrower and slightly longer ductus bursae and slightly larger appendix bursae.

Shargacucullia (Shargacucullia) nekrasovi G. Ronkay, L. Ronkay & Gyulai, 2011

Figures 3, 8, 9, 12, 15

Material examined. 1 male, 30.IV.2015, E Kazakhstan,



Figures 16, 17. East Kazakhstan, Tarbagatai Mountains, habitats of *Shargacucullia* spp. **16.** 1 km N of Kyzymbet (Alekseevka) village, 47°15'47" N, 081°32.42" E, 960 m, 20 April 2014, the habitat of *Sh. verbasci*. **17.** 6.7 km N of Kyzymbet (Alekseevka) village, 47°18'21.9" N, 081°32'9.1" E, 1300 m, 9 June 2013, the habitat of *Sh. xylophana*.

Urdzhar district, W Tarbagarai Mts, 9.5 km ENE of Tasaryk village, 705 m, 47°08'04.6" N, 081°24'51.0" E, bottom of rocky slope, Volynkin A.V. & Titov S.V. leg., genital slide AV1464m Volynkin, deposited in SZMN, catalogue number: SZMN-Shargacucullia-003.

The identification of the specimen from the Tarbagatai Ridge was confirmed using the original description by Ronkay et al. (2011). The genitalia of a specimen from the Tarbagatai Ridge correspond well to those of the holotype illustrated by Ronkay et al. (2011). The species can be distinguished from sympatric *S. verbasci* by its slightly paler forewing costa and darker hindwings, and *S. xylophana* differs by its darker forewing costa and dark brown wings ground colour. From specimens of *S. verbasci* in poor condition, *Sh. nekrasovi* can be distinguished only by studying the genital structures. In the male genitalia, *S. nekrasovi* differs from *S. verbasci* by its longer uncus, longer valva with much broader cucullus, narrower harpe, and longer and broader cornuti in vesica, and from *S. xylophana* by its slightly longer uncus, slightly broader cucullus, slightly larger harpe, and much longer and broader cornuti in vesica. In the female genitalia, *S. nekrasovi* differs from *S. verbasci* by its longer antevaginal plate, ductus bursae slightly longer and broader posteriorly, and smaller appendix bursae, and from *S. xylophana* by its broader and slightly shorter ductus bursae and slightly smaller appendix bursae.



Figure 18. East Kazakhstan, Tarbagatai Mountains, 9.5 km ENE of Tasaryk village, 705 m. 47°08'04.6" N, 081°24'51.0" E, 1 May 2015, the habitat of *Sh. nekrasovi* and *Sh. verbasci*.

Discussion

Thus, at present 3 species of *Shargacucullia* are known from the Altai Mountains, and all 3 of these are on their eastern and northeastern limits of their ranges. The Tarbagatai Ridge is located on the southwestern periphery of the Altai Mountains, between the western Altai Mountains and Central Asian Dzhungar Alatau Mountains. All 3 *Shargacucullia* species from the Tarbagatai Ridge are widely distributed in Central Asia, and this fact confirms the biogeographic position of the Tarbagatai as intermediate between biotas of the mountains of Siberia and Central Asia (Yakovlev and Guskova 2012).

Shargacucullia verbasci is represented in the Tarbagatai Mountains by the Central Asian subspecies *S. verbasci orientalis* G. Ronkay, L. Ronkay & Gyulai, 2011 known from Uzbekistan, Kyrgyzstan, Tajikistan and southern Kazakhstan (Ronkay et al. 2011). In the foothills of the Tarbagatai Ridge the species inhabits xero-mesophilous slopes with *Lonicera*, *Rosa* and *Salix* shrubs and poplar trees (Fig. 15). This is the northeasternmost locality of the subspecies and easternmost locality of the species, up to 400 km distant from the previously known localities in southeastern Kazakhstan.

Shargacucullia xylophana is known from southern Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, northwestern China (Xinjiang), eastern Afghanistan, northeastern Pakistan, northwestern India (Ronkay et al. 2011). In the Tarbagatai Ridge this species inhabits mesophilous slopes with *Lonicera* and *Rosa* shrubs (Fig. 16). These are the north-easternmost localities of the species, up to 500 km distant from the previously known localities in southeastern Kazakhstan and Chinese part of the Tien Shan mountain massif.

Shargacucullia nekrasovi was recently described from Tajikistan. The type series also included specimens from Kyrgyzstan, Uzbekistan, Turkmenistan and South Kazakhstan (Ronkay et al. 2011). In the Tarbagatai Ridge the single specimen was collected at the foot of the dry rocky mountain slope with *Spiraea* and *Caragana* shrubs (Fig. 17). The new find is the northeasternmost locality

of the species, up to 500 km distant from the previously known northeasternmost locality in southern Kazakhstan (northern part of the Tien Shan massif).

Acknowledgements

We thank Dr Timur Smagulov (Pavlodar, Kazakhstan), Mr Valery Volynkin (Biysk, Russia), Dr Kanat Akhmetov (Pavlodar, Kazakhstan), and Mr Svyatoslav Knyazev (Omsk, Russia) for organizing the entomological expeditions to East Kazakhstan in 2013–2015; and Mr Roman Artemjev (Novosibirsk, Russia) for valuable material from Kazakhstan part of the West Altai Mountains.

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